

CLAIMS

The following listing of claims will replace all prior versions of claims in the application:

1. (Currently Amended): A system comprising a plurality of devices, one of the devices operating as a task source device and at least one other device operating as a member of a synchrony group,

A. the task source device being configured to distribute a series of tasks to the synchrony group, each task being associated with a time stamp indicating a time, relative to a clock maintained by the task source device, at which the devices comprising the synchrony group are to execute the respective task;

~~B. each member device being configured to:~~

~~(i) periodically obtain from the task source device an indication of a current time value indicated by the task source device's clock, and~~

~~(ii) determine, from the time stamp associated with each respective task and a time differential value representing a difference between the current time value indicated by the task source device's clock, and a current time value indicated by its respective clock, a time, relative to its respective clock, at which it is to execute the task.~~

2. (Original): A system as defined in claim 1 in which the synchrony group comprises a plurality of member devices.

3. (Currently Amended): A system as defined in claim 2 in which each device comprising a member of the synchrony group is further configured to execute each task that it receives from the task source device at the determined time, ~~thereby to facilitate execution by them of respective tasks in the series in respective timing relationships relative to the time indicated by the task source device's clock.~~

4. (Original): A system as defined in claim 3 in which the member devices are configured to execute respective tasks in synchrony.

5. (Currently Amended): A system as defined in claim 2 in which one of the member devices operates as a master device for the synchrony group, ~~any other member devices comprising respective slave devices, the master device being configured to perform at least one type of synchrony group management operation, in connection with the member devices comprising the synchrony group.~~

6. (Currently Amended): A system as defined in claim 5 further including a user interface module configured to control the master device, ~~'s performance of said at least one type of synchrony group management operation, the master device being further configured to provide status information relating to the status of the synchrony group to the user interface module.~~

7-8 (Canceled)

9. (Currently Amended): A system as defined in claim 5, the system comprising at least one additional device; in which, ~~in one type of synchrony group management operation,~~ the master device is configured to enable the at least one additional device to join the synchrony group as a slave device.

10. (Currently Amended): A system as defined in claim 9 in which the task source device is configured to distribute tasks to the member devices using a selected multi-cast transmission methodology, ~~the member devices being configured to buffer the tasks until they are to be executed, and further in which, when the at least one additional device joins the synchrony group as a slave device, the task source device is enabled to transmit at least one previously distributed task to the slave device using a selected unicast transmission methodology.~~

11-18 (Canceled)

19. (Currently Amended): A system as defined in claim 5 in which, ~~in at least one type of synchrony group management operation,~~ the member device operating as the master device is configured to enable the master device to migrate from one member device to another member device in the ~~synchrony group~~ system.

20. (Currently Amended): A system as defined in claim 5 in which, ~~in at least one type of synchrony group management operation,~~ the master device is configured to enable the task source device to migrate from one device to another device in the system.

21-30 (Canceled)

31. (Currently Amended): A system as defined in claim 1 in which at least one member device is further configured to adjust its clock rate, ~~in relation to a clock rate value maintained by the task source device's clock.~~

32. (Cancelled)

33. (Original): A system as defined in claim 1 in which at least one other device operates as a task source device configured to distribute tasks to a second synchrony group, ~~the device operating as the task source device for the first synchrony group also operating as a member device of a second synchrony group.~~

34-64 (Canceled)

65. (Currently Amended): A device for executing a series of tasks provided by a task source at times specified by the task source in relation to a clock maintained by the task source, the device comprising:

A. an interface module configured to receive the series of tasks;~~each task being associated with a time stamp, each time stamp indicating a time value relative to a time indicated a clock maintained by the task source, at which the device is to execute the respective task;~~

B. a current time retrieval module configured to obtain, from the task source, a current time value;~~as indicated by the task source's clock;~~

C. an execution time determination module configured to determine,~~from the time stamp associated with each respective task and a time differential value representing a difference between the current time value obtained by the current time retrieval module and a current time value indicated by a clock maintained by the device, a time, relative to the device's respective clock, at which the task is to be executed; and~~

D. a task execution module configured to execute each respective task,~~at the time determined by the execution time determination module.~~

66. (Original): A device as defined in claim 65 further including a control module for controlling execution of commands received by said interface module.

67-85 (Canceled)

86. (Currently Amended): A device as defined in claim 65 further including:

A. a migration information receiving module configured to receive migration information from the task source device;~~the migration information including a source for information respecting the tasks to be distributed, timing information relative to the clock maintained by the task source device and identifications of the member devices of the synchrony group,~~
and

B. a migration control module configured to,~~after the migration information has been received,~~

- i.~~—distribute the series of tasks to the synchrony group, each task being associated with a time stamp indicating a time, relative to the timing information that it receives from the device operating as the task source device, at which the devices comprising the synchrony group are to execute the respective task, and~~
- ii.~~—notify the members of the synchrony group that it is to thereafter operate as the task source device.~~

87–90 (Canceled)

91. (Currently Amended): A device as defined in claim 65 further including a clock rate adjustment module configured to adjust the member device's clock rate,~~in relation to a clock rate value maintained by the task source device's clock.~~

92–108 (Canceled)

109. (Currently Amended): A method of operating a system comprising the steps of ~~plurality of devices, one of the devices operating as a task source device and at least one other device operating as a member of a synchrony group,~~

~~A. the task source device being enabled to distribute~~ing a series of tasks to ~~the~~ a synchrony group,

~~each task being~~ associateding each of the tasks with a time stamp;

indicating a time, relative to a clock maintained by ~~the~~ a task source device, at which ~~the~~ devices comprising the synchrony group are to execute the respective tasks~~;~~

~~B. each member device being enabled to:~~

~~(i) periodically obtain from the task source device an indication of a current time value indicated by the task source device's clock, and~~

~~(ii) determine, from the time stamp associated with each respective task and a time differential value representing a difference between the current time value indicated by the task source device's clock, and a current time value indicated by its respective clock, a time, relative to its respective clock, at which it is to execute the task.~~

110. (Original): A method as defined in claim 109 in which the synchrony group comprises a plurality of member devices.

111. (Currently Amended): A method as defined in claim 110 ~~in which each device further~~ comprising the step of enabling a member of the synchrony group ~~is further enabled to execute~~ each task that it receives from the task source device ~~at the a determined time, thereby to~~ ~~facilitate execution by them of respective tasks in the series in respective timing relationships~~ ~~relative to the time indicated by the task source device's clock.~~

112. (Original): A method as defined in claim 111 further comprising the step of ~~in which the~~ enabling the member devices ~~are enabled to execute~~ respective tasks in synchrony.

113. (Currently Amended): A method as defined in claim 110 ~~in which one of the member~~ ~~devices operates as a master device for the synchrony group, any other member devices~~ ~~comprising respective slave devices, the master device being further comprising the step of~~ enabling a member device to perform at least one type of synchrony group management operation, ~~in connection with the member devices comprising the synchrony group.~~

114. (Currently Amended): A method as defined in claim 113 further comprising the step of ~~including a user interface module enabled to controlling a the master device's performance of~~ ~~said at least one type of synchrony group management operation, the master device being further~~ ~~enabled to provide~~ distribution of status information, ~~relating to the status of the synchrony~~ ~~group to the user interface module.~~

115–116 (Canceled)

117. (Currently Amended): A method as defined in claim ~~109~~ 113, further comprising the step of the method comprising at least one additional device, in which, in one type of synchrony group management operation, the master device is enabled~~ing to enable the~~ at least one additional device to join the synchrony group as a slave device.

118. (Currently Amended): A method as defined in claim ~~110~~ 117 further comprising the step of in which the task source device is enabled to distribute~~ing~~ tasks to the member devices using a selected multi-cast transmission methodology, ~~the member devices being enabled to buffer the tasks until they are to be executed, and further in which, when the at least one additional device joins the synchrony group as a slave device, the task source device is enabled to transmit at least one previously distributed task to the slave device using a selected unicast transmission methodology.~~

119–120 (Canceled)

121. (Currently Amended): A method as defined in claim ~~113~~ 109 further comprising the step of in which, in at least one type of synchrony group management operation, the master device is enabled to controll~~ing~~ the series of tasks to be distributed by the task source device.

122–126 (Canceled)

127. (Currently Amended): A method as defined in claim ~~113~~ 110 further comprising the step of in which, in at least one type of synchrony group management operation, the member device operating as the master device is enabled to enable the master device to migrate the function of from one member device to another member device, in the synchrony group.

128. (Currently Amended): A method as defined in claim ~~113~~ 127 further comprising the step of in which, in at least one type of synchrony group management operation, the master device is enabled to perform the step of enabling the task source device to migrate from one device to another device in the system.

129-137 (Canceled)

138. (Currently Amended): A method as defined in claim ~~135~~ 109 further comprising the step in which task source device is enabled to perform the steps of obtaining information associated with the tasks from at least two types of information sources, and selecting, for each task, the delay interval between the time indicated by the time stamp and the current time based on the information source type that is associated with the respective task.

139. (Currently Amended): A method as defined in claim ~~109~~ 110 further comprising the step in which at least one member device is further enabled to perform the step of adjusting its the clock rate of a member device, in relation to a clock rate value maintained by the task source device's clock.

140. (Canceled)

141. (Currently Amended): A method as defined in claim 109 further comprising the step of ~~in which at least one other device operates as a task source device enabled to distribute~~ing tasks to a ~~second synchrony group, the device operating as the task source device for the first synchrony group also operating as a member device of a second synchrony group.~~

142–155 (Canceled)

156. (Currently Amended): A method as defined in claim 109 further comprising the step of ~~including, within a task source device,~~

A. ~~—a task acquisition step of obtaining respective ones of~~ information associated with the ~~tasks from a single information source.;~~

B. ~~—a task execution time determination step of determining a time at which each respective~~
~~task is to be executed,; and to associate the respective task with a time stamp indicating~~
~~its execution time;~~

C. ~~—a task transmission step of transmitting the series of tasks to said at least one other~~
~~device,; and~~

D. ~~—an execution control command generation step of, in response to a predetermined event~~
~~and during the task transmission step, the insertion into the series of tasks transmitted by~~
~~the task transmission module of a command to enable the at least one other device to~~
~~modify the execution sequence of the tasks transmitted thereto.~~

157-200 (Canceled)

201. (Currently Amended): A method of operating a device ~~for distributing a series of tasks for execution by at least one other device at respective execution times, the method comprising the~~ steps of:

- ~~A.~~ a task acquisition step of obtaining ~~respective ones of the~~ a series of tasks;
- ~~B.~~ a task execution time determination step of determining a time at which each respective task is to be executed; ~~and to associate the respective task with a time stamp indicating its~~
~~execution time; and~~
- ~~C.~~ a task transmission step of transmitting the series of tasks from the device to said at least one other device; ~~and~~
- ~~D.~~ ~~an execution control command generation step of, in response to a predetermined event and during the task transmission step, the insertion into the series of tasks transmitted by the task transmission module of a command to enable the at least one other device to modify the execution sequence of the tasks transmitted thereto.~~

202. (Currently Amended): A method as defined in claim 201 further comprising in which the ~~task transmission step includes~~ the step of utilizing a selected multi-cast transmission methodology.

203-205 (Canceled)

206. (Currently Amended): A method as defined in claim ~~203~~ 201 in which the series of tasks includes a series of task sequences, ~~with each task sequence including a sub-set of the series of tasks, the execution control command generation step including the steps of, in response to said predetermined event,~~

~~(i) enabling during the task transmission step the insertion, into the series of tasks, of a command enabling the at least one other device to terminate execution of the currently executing task and/or to not execute at least one subsequent task, if any, in the task sequence including the currently executing task; and~~

~~(ii) enabling~~

~~(a) during the task execution time determination step, that time stamps associated with tasks of task sequences subsequent to the task sequence currently being executed will reflect the termination and/or non-execution of tasks from the task sequence of the task that is currently being executed, and~~

~~(b) during the task transmission step, the transmission of the tasks of the subsequent task sequences to the at least one other device.~~

207-217 (Cancelled)

218. (Currently Amended): A computer program ~~product~~ for use in connection with a computer to provide a device for executing a series of tasks provided by a task source at times specified by the task source in relation to a clock maintained by the task source, the computer program ~~product~~ comprising a computer-readable medium having encoded thereon:

- A. an interface module configured to enable the computer to receive the series of tasks, each task being associated with a time stamp, each time stamp indicating a time value; ~~relative to a time indicated a clock maintained by the task source, at which the device is to execute the~~ respective task;
- B. a current time retrieval module configured to enable the computer to obtain, from the task source, a current time value; ~~as indicated by the task source's clock;~~
- C. an execution time determination module configured to enable the computer to determine, from the time stamp associated with each respective task ~~and a time differential value representing a difference between the current time value obtained by the current time retrieval module and a current time value indicated by a clock maintained by the device, a~~ time, ~~relative to the device's respective clock,~~ at which the task is to be executed; and
- D. a task execution module configured to enable the computer to execute each respective task at the time determined by the execution time determination module.

219. (Currently Amended): A computer program ~~product~~ as defined in claim 218 further including a control module for enabling said computer to control execution of commands received by the interface module.

220. (Canceled)

221. (Currently Amended): A computer program ~~product~~ as defined in claim ~~220~~ 218 in which the series of tasks includes a series of task sequences, ~~with each task sequence including a subset of the series of tasks, the interface module being further configured to enable the computer to receive task execution control commands for controlling task execution, the control module being configured to enable the computer to, in response to receipt of at least one task execution control command for controlling task execution, enable the task execution module to terminate execution of a task sequence currently being executed, being configured to enable the computer to not execute subsequent tasks in the task sequence that have been buffered.~~

222–228 (Canceled)

229. (Currently Amended): A computer program ~~product~~ as defined in claim ~~228~~ 219 in which, in response to control information to enable another device to become a member of the device's synchrony group, the control module enables the interface module to transmit a command to the other device to enable the other device to become a member of the synchrony group.

230–232 (Canceled)

233. (Currently Amended): A computer program ~~product~~ as defined in claim ~~232~~ 218 in which the interface module is further configured to enable the computer to transmit the tasks to at least one other device.

234–243 (Canceled)

244. (Currently Amended): A computer program ~~product~~ as defined in claim 218 further including a clock rate adjustment module configured to enable the computer to adjust the member device's clock rate, ~~in relation to a clock rate value maintained by the task source device's clock.~~

245-548 (Canceled)

549. (New): The system of claim 1 wherein each member device is further configured to periodically obtain from the task source device an indication of a current time value indicated by the task source device's clock.

550. (New): The system of claim 549 wherein each member device is further configured to determine, from the time stamp associated with each respective task and a time differential value representing a difference between the current time value indicated by the task source device's clock, and a current time value indicated by its respective clock, a time, relative to its respective clock, at which it is to execute the task.

551. (New): The system of claim 6 wherein the master device is further configured to provide status information relating to the status of the synchrony group to the user interface module.

552. (New): The system of claim 10 wherein the task source device is enabled to transmit at least one previously distributed task to the slave device using a selected unicast transmission methodology.

553. (New): The system of claim 31 wherein the clock rate of the at least one member device is adjusted in relation to a clock rate value maintained by the task source device's clock.

554. (New): The system of claim 33 wherein the device operating as the task source device for the first synchrony group is also operating as a member device of a second synchrony group.

555. (New): The device of claim 86 wherein the migration control module is further configured to notify the members of the synchrony group that it is to thereafter operate as the task source device.

556. (New): The method of claim 114 wherein the master device is further enabled to provide status information relating to the status of the synchrony group to the user interface module.

557. (New): A system for synchronizing operations among a plurality of digital data processing devices comprising:

- at least one task distribution device configured to distribute tasks over a network; and
- at least one member device configured to perform the tasks in synchrony.

558. (New): The system of claim 557 further comprising an interface module configured to control one or more synchrony groups.

559. (New): The system of claim 558 wherein the user interface module is further configured to display visual images representative of the tasks being performed in synchrony.

560. (New): The system of claim 559 wherein the user interface module further comprises a motion sensor configured to activate the user interface module when moved by a user.

561. (New): The system of claim 560 wherein the user interface module further comprises a scroll wheel for the selection of the tasks to be performed in synchrony.

562. (New): The system of claim 557 wherein the task distribution device is further configured to enable the at least one member device to initiate without appreciable delay the performance of the tasks in synchrony.

563. (New): The system of claim 557 wherein the task distribution device is further configured to allow one or more additional member devices to join without appreciable delay or disengage without appreciable delay the at least one member device's synchronous performance.

564. (New): The system of claim 557 wherein the at least one task distribution device is further configured to obtain information associated with the tasks from at least one information source.

565. (New): The system of claim 557 wherein the at least one task distribution device is independently clocked.

566. (New): The system of claim 557 wherein the at least one member device is independently clocked.

567. (New): The system of claim 557 wherein each of the tasks is associated with a time stamp relative to a clock maintained by the at least one task distribution device.

568. (New): The system of claim 557 wherein the tasks comprise audio tracks.

569. (New): The system of claim 568 wherein the audio tracks are in a WMA format.

570. (New): The system of claim 557 wherein the tasks comprise visual tracks.

571. (New): The system of claim 557 wherein the tasks comprise audiovisual tracks.

572. (New): The system of claim 564 wherein the at least one information source is an Apple iPod®.

573. (New): The system of claim 564 wherein the at least one information source is an Internet broadcast.

574. (New): The system of claim 564 wherein the at least one information source is a satellite broadcast.

575. (New): The system of claim 567 wherein the time stamp represents when the at least one member device is to execute the task.

576. (New): A system for synchronizing operations among a plurality of digital data processing devices comprising a zone player residing within one or more audio reproduction devices.